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MULTIPLE CHAMBER PRESSURIZED AEROSOL CONTAINER

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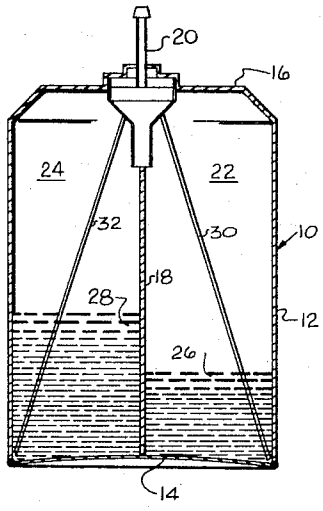


FIG. 1.

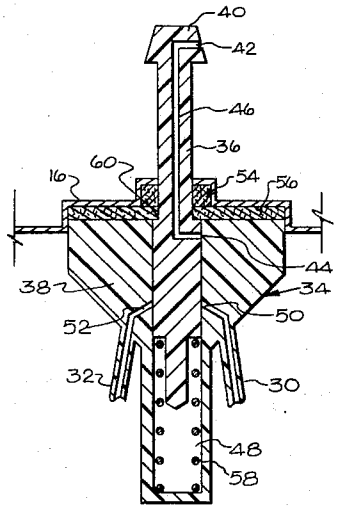


FIG. 2.

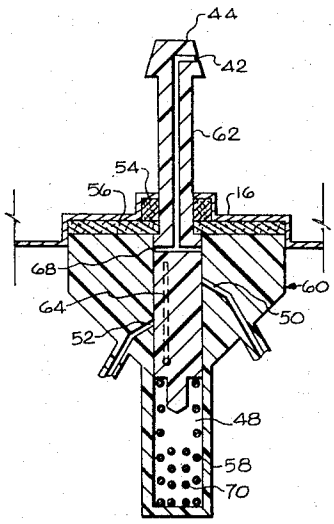


FIG. 3.

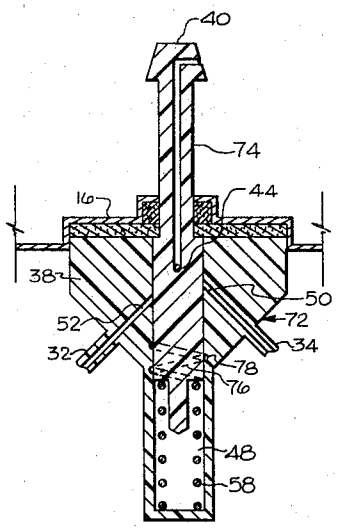


FIG. 4.

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MULTIPLE CHAMBER PRESSURIZED AEROSOL CONTAINER

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ABSTRACT OF THE DISCLOSURE

An erosol dispenser is provided having a plurality of separate chambers and a valve which is adapted to permit the selective dispensing of material from a predetermined chamber.

This invention relates to an aerosol dispenser. More particularly, this invention relates to an aerosol dispenser adapted to separately contain and individually dispense two or more liquids.

Aerosol containers are used to dispense a variety of materials, including such things as paints, shaving creams, insecticides and medicinal preparations. Most of the aerosol dispensers available heretofore could contain and dispense only one liquid at a time. Some of the newer dispensers could contain two liquids separately but dispensed them simultaneously. However, an aerosol container having only one valve capable of containing and dispensing several different liquids individually was not available heretofore.

There existed a need for this type of aerosol dispenser in a number of different fields. For example, in the medical field, more particularly the first-aid field, there was a need for a single container which could initially dispense an antiseptic and thereafter dispense a film-forming dressing, thereby providing a true first-aid kit in a can.

In the paint field there existed a need for an aerosol container capable of dispensing a plurality of different types of paint in series so as to first spray a primer coat and thereafter a sealer coat. There are other applications wherein a single aerosol dispenser capable of dispensing separately different types of liquid would be useful. These applications are well known to those skilled in the art and will not be gone into in further detail.

Accordingly, it is a general objective of this invention to provide an aerosol container capable of dispensing a plurality of different liquids in separate emissions.

It is an additional objective of this invention to provide a compact aerosol container of simple design for dispensing two or more liquids individually.

It is a still further objective of this invention to provide an aerosol container capable of dispensing separately a plurality of liquids, said container being activated by a single push-button-type valve.

It is a still further object of this invention to provide an aerosol dispenser operated by a single reversible valve mechanism capable of dispensing a plurality of liquids in series.

Other objects and advantages of the present invention will become further apparent from the attached specification, the appended claims and from the drawings in which:

FIG. 1 is a cross section view of an aerosol dispenser having two chambers and a common valve.

FIG. 2 is an enlarged cross sectional illustration of the valve illustrated in FIG. 1.

FIG. 3 is an enlarged cross sectional illustration of an alternate embodiment of the valve illustrated in FIG. 1.

FIG. 4 is an enlarged cross sectional illustration of an additional alternate embodiment of the valve illustrated in FIG. 1.

Briefly, the objects of this invention are obtained by providing an aerosol dispenser having a plurality of separate chambers and a valve which is adapted to selectively dispense the liquids from one of the chambers.

Referring to the drawings more particularly, the number 10 generally denotes an aerosol dispenser made according to the teaching of this invention. The dispenser 10 is comprised of a vertical wall portion 12, a base portion 14, an upper wall portion 16, a dividing wall 18 and a valve 20. The wall portions 12, 16, 18, the base portion 14 and the valve 20 are formed into an integral unit. The dividing wall 18 separates the dispenser 10 into two separate chambers, 22 and 24. Each of these chambers contains a liquid 26, 28 and a gaseous propellant. In each chamber there are conduits 30, 32, which have one terminal end near base 14 and the other terminal in communication with the valve 20. The wall portion 16 is crimped about the valve 20 and holds the valve 20 in position.

The chambers 22, 24 are gas tight and sealed from each other. There is a sufficient amount of a gas propellant agent in each chamber to force the liquids 26, 28 up the conduits 30 and 32 and through the valve 20 if the valve is in a suitable open position.

Number 34 generally denotes a first embodiment of the valve 20 of the dispenser 10. The valve is comprised of two major portions, a valve stem 36 and a body 38. The valve stem 36 has a circular cross section and is rotatable on its major axis. The valve stem 36 has a head portion 40 which is adapted to be depressed manually and contains an exit orifice 42. In addition the valve stem 36 has an inlet port 44 and an axial through duct 46. The duct 46 communicates with the inlet port 44 at one terminal end and the exit orifice 42 at its other terminal end.

The valve body 38 has an axial bore 48 which receives the stem 36. The dimensions of the bore 48 and the stem 36 are such that a liquid tight but slidable fit is made between the stem and the body. The conduits 30, 32 terminate at the bore 48. The terminal end of the conduits 30, 32 form exit ports 50, 52 for their respective chambers 22, 24. The exit ports 50, 52 are illustrated in an opposing relationship.

There are resilient seals 54, 56 positioned about the stem 36. The seals 54, 56 prevent the escape of gas and liquid from the dispenser 10. The valve stem 36 is urged upward to a closed position by a helically wound compression spring 58. The stem 36 is stopped in an upward movement by the shoulder 60, which contacts the resilient seal 56 at the upper limit of the movement of stem 36.

The valve 34 is shown in the closed position. To activate the valve and dispense the liquid from the first chamber 22, the head portion 40 is depressed until the inlet port 44 of the valve stem 36 is aligned with the exit port 50. The contents 26 of the chamber 22 will then be expelled by the gaseous propellant agent in the chamber 22.

To dispense liquid in the second chamber 24, the stem is rotated on its major axis until the inlet port 44 is aligned with the exit port 52 whereupon the gaseous propellant agent in chamber 24 forces the liquid 28 out of the container 10. To return the valve to the closed position the pressure on the head portion 40 is released and the spring 58 urges the stem upward to the closed position.

The number 60 generally denotes an alternate embodiment of the valve 20. It is similar to the embodiment illustrated in FIG. 2, with certain exceptions. The valve 60 has a guide means 64 comprised of a guide pin and a mating slot which permits reciprocal movement but limits rotational movement of the stem 62. The inlet port 68 is a through traverse bore. The exit ports 50, 52 are positioned one above the other along the major axis of the bore 48. In addition to the spring 58 heretofore described, there is

an additional spring 70, shorter than the spring 58 in the base of the bore 48.

The valve 60 is shown in the closed position. To dispense the liquid 26 from the chamber 22 the head portion 40 is depressed until the inlet port 68 is aligned with the exit port 50 whereupon the gaseous propellant agent in chamber 22 forces out the liquid 26. Using the valve 60, the first position is readily detected by the additional resistance exerted by the spring 70, when the inlet port 68 is aligned with the exit port 50. To dispense the liquid 28 from the chamber 24 the stem 62 is further depressed until the inlet port 68 is aligned with the exit port 52. This embodiment 60 has several unique advantages. Different liquids can be dispensed by one continuous downward stroke of the valve stem 62. The use of the dual springs 58, 70 make it easy to determine when the inlet and exit ports are aligned. Another important feature of this embodiment is that different liquids can be dispensed without rotating the exit orifice 42. This permits one continuous spray of a plurality of liquids without a shift in the spray pattern.

The number 72 generally denotes an alternate embodiment of the valve 20 of the dispenser 10. The components are generally similar to those of the valve 34. The valve stem 74 has a male threaded portion 76, which is engaged with a mating female threaded portion 78 of the housing 38. The exit port 50, 52 are positioned one above the other along the axis or the bore 48. The inlet port 44 is similar to the inlet port illustrated in FIG. 1.

The valve 72 is shown in a closed position. To dispense the liquid 26 from the chamber 22 the head portion 40 is manually depressed. The stem 74 is guided in a helically downward movement by the threaded portions 76, 78 until the inlet port 44 is aligned with the exit port 50 whereupon the gaseous propellant agent in chamber 22 expels the liquid 26. When the head portion 40 is further depressed, the stem 74 moves downward in a helical manner until the inlet port 44 is aligned with the exit port 52, whereupon the liquid 28 is expelled by the gaseous propellant in the chamber 24. To return the valve to the closed position, pressure is released from the head portion 40 and the spring 58 urged the stem 74 upward to the closed position.

What is claimed is:

1. An aerosol dispenser adapted to contain and separately dispense a plurality of liquids, said dispenser comprising in combination: first and second chambers and a valve mechanism integrally connected with said first and second chambers; said chambers being adapted to contain liquids and gaseous propellants; said chambers having first and second outlet ports respectively; said valve mechanism comprises a body, a reciprocally movable stem and stem return means; said body having an axial bore, said stem having an inlet port and a final exit orifice and an internal axial duct communicating with said inlet port and exit orifice, said stem being disposed within said bore in a liquid tight fit, said first outlet port communicating with said bore at a first location, said second outlet port communicating with said bore at a second location, said valve mechanism having a closed position and first and second open positions, said stem being urged to said closed position by said stem return means, said stem being movable to said first open position wherein the inlet port of said stem is in exclusive communication with the first exit port, said stem being movable to said second position wherein said inlet port is in exclusive communication with said second exit port whereby when valve mechanism is in the first position the liquid in the first chamber is dispensed and when said valve mechanism is in the second position, the liquid in the second chamber is dispensed.

2. The dispenser according to claim 1 wherein the said first and second outlet ports are located in an opposing relationship and wherein the stem is rotatable on its major axis whereby when the stem is depressed to said first position the liquid in said first chamber is dispensed and whereby when the stem is rotated on its major axis from said first position to said second position the liquid in said second chamber is dispensed.

3. The dispenser according to claim 1 wherein said valve mechanism includes guide means adapted to limit the rotational movement of said stem and wherein the said first outlet port is located above the said second outlet port whereby when said stem is depressed to said first open position the inlet port is aligned with said first outlet port and whereby when said stem is advanced to said second open position the said inlet port is aligned with said second outlet port.

4. The apparatus according to claim 1 wherein said stem is helically threaded with said body, said stem thereby being adapted to advance helically to said first open position and to further helically advance to said second open position.

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